

[0099] What is claimed is:

1. A remote sensing unit, comprising:

at least one sensor, for measuring various aspects of the environment in proximity to a sensing unit;

at least one signal processor, for processing measurements from said at least one sensor;

a two-way telemetry function, for sending data to and receiving data from a host terminal;

a tamper detection system for determining when said remote sensing unit has been opened;

at least one controller, for storing results from said at least one signal processor, controlling power availability to selected devices associated with said remote sensing unit, and for processing data from said host terminal; and,

at least one power supply, for distributing controlled power to selected devices associated with said remote sensing unit.

- 2) The remote sensing unit of Claim 1, in which said at least one sensor is an optical sensor.
- 3) The remote sensing unit of Claim 2, in which said optical sensor can detect electrical current flow.
- 4) The remote sensing unit of Claim 2, in which said optical sensor can detect the chemical composition of an environment surrounding said sensors.
- 5) The remote sensing unit of Claim 1, in which said at least one sensor includes a biocide to retard or eliminate biofouling.
- 6) The remote sensing unit of Claim 1, in which said at least one controller includes a microprocessor.
- 7) The remote sensing unit of Claim 1, in which said at least one controller can control power distribution from said one or more power supplies to other remote sensing unit components.
- 8) The remote sensing unit of Claim 1, in which said at least one power supply receives traditional electrical power.
- 9) The remote sensing unit of Claim 1, in which said at least one power supply receives

power from an alternative energy source.

- 10) The remote sensing unit of Claim 1, in which said two-way telemetry function includes one or more cellular telephone interfaces.
- 11) The remote sensing unit of Claim 1, in which said two-way telemetry function is comprised of plain old telephone service.
- 12) The remote sensing unit of Claim 1, in which said two-way telemetry function is comprised of a wireless, point to point radio frequency interface.
- 13) The remote sensing unit of Claim 1, in which said two-way telemetry function is comprised of a wireless satellite interface.
- 14) The remote sensing unit of Claim 1, further comprising position determination device.
- 15) The remote sensing unit of Claim 14, in which said position determination device is a Global Positioning System receiver.
- 16) A remote sensing method, comprising the steps of:
  - controlling power available to selected remote sensing unit components;
  - measuring at least one aspect of the environment in proximity to said remote sensing unit;
  - processing and storing said at least one measured aspect as data; and,
  - transmitting said data to a host terminal.
- 17) The remote sensing method of Claim 16, further comprising the step of defining appropriate intervals during which said controlled power is available to said remote sensing unit components based on control information received from said host terminal.